

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 3, 2018/2019

TTP 3121 – TCP/IP PROGRAMMING

(All Sections / Groups)

28 MAY 2019
2.30 p.m. – 4.30 p.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 4 printed pages including cover page with 5 questions only.
2. Attempt **ALL** questions. Marks and the distribution of marks for each question is given.
3. Please write all your answer in the Answer Booklet provided.

Question 1 [10 Marks]

- (a) Briefly explain **TWO** functionalities of the transport layer in TCP/IP Model.
[2 Marks]
- (b) With aid of diagram, depict the three-way handshake of TCP connection.
[4 Marks]
- (c) Using suitable diagrams, briefly explain **TWO** types of client server architecture.
[4 Marks]

Question 2 [10 Marks]

- (a) Briefly outline **THREE** concepts of UNIX signal.
[3 Marks]
- (b) Briefly explain the concept of fork () system call.
[3 Marks]
- (c) Write a simple Python program to illustrate the fork () system call by printing process ID of the parent and child processes.
[4 Marks]

Question 3 [10 Marks]

- (a) Explain **THREE** ways to share information between UNIX processes.
[3 Marks]
- (b) Referring to Figure 1, answer the following:
- i. Determine the operation and function of the program.
 - ii. Specify the outputs of the program.
- [1 + 2 = 3 Marks]

Continued ...

```
1 import os
2
3 def communication(child_writes):
4
5     r, w = os.pipe()
6
7
8     processid = os.fork()
9     if processid:
10
11         os.close(w)
12         r = os.fdopen(r)
13         print ("Parent reading")
14         str = r.read()
15         print( "Parent reads =", str)
16         :
17
18         os.close(r)
19         w = os.fdopen(w, 'w')
20         print ("Child writing")
21         w.write(child_writes)
22         print("Child writes = ", child_writes)
23         w.close()
24
25     else:
26         child_writes = "Hello World"
27         communication(child_writes)
```

Figure 1

- (c) Write the programming steps to lock/unlock a semaphore.

[4 Marks]

Question 4 [10 Marks]

- (a) Briefly explain setsockopt() and getsockname() functions.

[2 Marks]

- (b) Write simple echo server and echo client programs using TCP sockets whereby the server will simply echo whatever it receives back to the client.

[7 Marks]

- (c) Outline the difference between the little-endian byte order and the big-endian byte order.

[1 Mark]

Question 5 [10 Marks]

- (a) Outline **TWO** benefits of Remote Procedure Call (RPC). [2 Marks]
- (b) Explain **TWO** reasons why is the connectionless transport service more desirable for supporting RPCs. [2 Marks]
- (c) Write short notes on Blocking I/O model and Non-Blocking I/O model. [6 Marks]

End of Paper